

REMARKS

Claims 5-15, 17, and 19-24 are pending in the present patent application. Claims 8-15, 17, and 19-24 are indicated as being allowed, but also objected to. Claims 5-7 stand rejected. This application continues to include claims 5-15, 17, and 19-24.

Applicants thank the Examiner for the indication of allowance of claims 8-15, 17, and 19-24 at pages 4 and 5 of the present Office Action. The Office Action Summary, however, indicates that claims 8-15, 17, and 19-24 were objected to, but no support for any objections was found in the body of the Office Action. Accordingly, in view of the indicated allowance of claims 8-15, 17, and 19-24, it is assumed that the indicated objection was a typographical error. Please advise Applicants promptly if this is not the case.

Claim 5 was rejected under 35 U.S.C. 103(a) as being unpatentable over Prior Art (Figs. 1A-2B) in view of Wang, et al., U.S. Patent No. 6,209,993 B1 (filed March 29, 1999). Claims 6-7 were rejected under 35 U.S.C. 103(a) as being unpatentable over Prior Art (Figs. 1A-2B) in view of Wang, et al., as applied to claim 5, and further in view of Brandon, et al., U.S. Patent No. 5,751,324. Applicants respectfully request reconsideration of the rejection of claims 5-7 in view of the following.

Applicants submit herewith a Declaration Under 37 C.F.R. 1.131(a) to establish invention of the subject matters of claims 5-7 prior to March 29, 1999, the U.S. filing date of Wang, et al. Accordingly, Applicants respectfully request that all rejections based in part on the Wang, et al. reference be withdrawn. Therefore, claims 5-7 are believed allowable in their present form.

Notwithstanding the above, Wang, et al. is directed to a method for fabricating an ink-jet printhead chip that reduces a resistance when inks flow through ink slots and prevents the ink slots from clogging (col. 1, lines 25-28). Wang, et al. discloses a silicon substrate 100 having a first surface 10 (col. 2, lines 7-8). A groove 102 is formed in surface 10, and an ink slot 104 is formed at the bottom of groove 102 (col. 2, lines 8-21, Fig. 2). Surface 10 is for adhering to an ink cartridge, and includes an overflow groove 108 formed thereon (col. 2, lines 28-30, Fig. 2). During the adhesion process, redundant paste flows into overflow groove 108, and not into groove 102, so that ink slot 104 is not clogged (col. 2, lines 30-33).

Applicants believe that claim 5 patentably defines Applicants' invention over the cited references, Prior Art in view of Wang, et al., taken alone or in combination, for at least the reasons set forth below.

Claim 5 is directed to an ink jet printhead assembly. Claim 5 recites, in part, adhesive at least partially disposed within said at least one cavity, said adhesive adhering said backside of said heater chip to said substantially flat surface of said substrate. The Examiner acknowledges that the Prior Art fails to teach the heater chip having a cavity and adhesive at least disposed within the at least one cavity. However, the Examiner asserts that Wang, et al. discloses at least one cavity (Fig. 2, element 108), and adhesive disposed within a groove (column 2, lines 28-33), and that it would have been obvious to one having ordinary skill in the art at the time Applicants' invention was made to modify the teaching of Prior Art to have the groove/cavity on the heater chip as taught by Wang, et al. The asserted motivation is to prevent clogging of the ink slot.

In contrast to adhesive at least partially disposed within the at least one cavity, the adhesive adhering the backside of the heater chip to the substantially flat surface of the substrate, as recited in claim 5, Wang, et al. merely discloses that during the adhesion process, redundant paste flows into overflow groove 108, and not into groove 102, so that ink slot 104 is not clogged (col. 2, lines 30-33).

In the Response to Arguments of the present Office Action, the Examiner further relies on Wang, et al. column 2, lines 59-63, for disclosing that when the printhead chip adheres to the ink cartridge, redundant paste flows into the overflow groove. However, there is no indication in Wang, et al. that the amount of redundant paste is sufficient to provide any auxiliary adhesion.

Wang, et al. simply does not disclose, teach, or suggest that the “redundant” paste in overflow groove 108 is used to adhere anything. Nor does Wang, et al. disclose that overflow groove 108 *is configured* such that the “redundant” paste therein might adhere silicon substrate 100 to anything. Rather, the sole disclosed use of overflow groove 108 by Wang, et al. is that of preventing ink slot 104 from being clogged, wherein overflow groove 108 receives an overflow of unneeded “redundant” paste (col. 2, lines 30-33).

In contrast to Wang, et al., the *adhesive* of claim 5, in conjunction with the surface area in the cavity, *adheres the heater chip to the substrate*, thus providing for improved bond integrity. For example, the cavity “provides chip 40 with a greater surface area that can be bonded to over a given X distance on chip 40.” (See Applicants’ specification at page 5, lines 1-2). “By providing a greater surface area for bonding, trenches 64 improve the integrity of

the bond lines in small areas, such as between multiple ink vias on a given chip.” (See Applicants’ specification at page 5, lines 10-12). Accordingly, even if the Prior Art and Wang, et al. were combined, their combination would not yield Applicants’ invention, as recited in claim 5.

Accordingly, notwithstanding the Declaration Under 37 C.F.R. 1.131(a) that removes the Wang, et al. reference, Applicants respectfully submit that the cited references, Prior Art in view of Wang, et al., taken alone or in combination, do not disclose, teach, or suggest the subject matter of claim 5. Accordingly, claim 5 is believed allowable in its present form.

Further, notwithstanding the Declaration Under 37 C.F.R. 1.131(a) that removes the Wang, et al. reference, claims 6 and 7 are believed allowable due to their dependence, directly or indirectly, on otherwise allowable base claim 5, since Brandon, et al. does not overcome the deficiencies of the Prior Art and Wang, et al. with respect to claim 5. Rather, Brandon, et al. discloses that grooves 46, 48 define in the cartridge body an effective vent for venting gas produced during the heat curing cycle to the ambient environment without the formation of die bond channels in adhesive 26, (see Brandon, et al. col. 5, ll. 49-52), and thus, would not render claim 5 obvious, when Brandon, et al. is considered in combination with the Prior Art and Wang, et al.

In addition, Brandon is directed to forming vent grooves in the ink cartridge body, in contrast to forming vent grooves in the printhead chip, as in Applicants’ claims 6 and 7. As stated in claim 6, the “at least one trench” included in the cavity formed in the backside of the heater chip extends to an outside edge of the heater chip to thereby form at least one vent. As

further defined in claim 7, the at least one vent is configured for allowing the adhesive to outgas during curing.

Referring to Brandon, et al. column 2, lines 59-63, the adhesive is disposed within the die cavity (see die cavity 44 of Figs. 4-6) between the cartridge body and the printhead, and at least one groove (see grooves 46, 48 of Figs. 4-6) in the cartridge body defines a vent from the die cavity to the ambient atmosphere. Thus, in Brandon, et al., the vent grooves in the cartridge body only extend to, but not into, the die cavity. Thus, the vent grooves of Brandon, et al. can only vent gases that exit the perimeter of the die (chip) cavity, in contrast to defining vent grooves in the heater chip that can vent from under the heater chip.

Accordingly, even if Brandon, et al. was combined with the Prior Art and Wang, et al., the combination would not yield the subject matter of the present invention, as defined in Applicants' claims 6 and 7.

For the foregoing reasons, Applicants submit that the present application is in condition for Allowance in its present form, and it is respectfully requested that the Examiner so find and issue a Notice of Allowance in due course.

In the event Applicants have overlooked the need for an extension of time, an additional extension of time, payment of fee, or additional payment of fee, Applicants hereby conditionally petition therefor and authorize that any charges be made to Deposit Account No. 20-0095, TAYLOR & AUST, P.C.

Should any question concerning any of the foregoing arise, the Examiner is invited to
telephone the undersigned at (317) 894-0801.

Respectfully submitted,



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July 8, 2004

Date